



## Part 2. Status of the Statewide System of Natural Areas 2003

---

**B**uilding and maintaining Washington's statewide system of natural areas is a cooperative effort. Various public agencies, private groups and individuals in Washington are working together to manage areas for the protection of our native species and ecosystems.

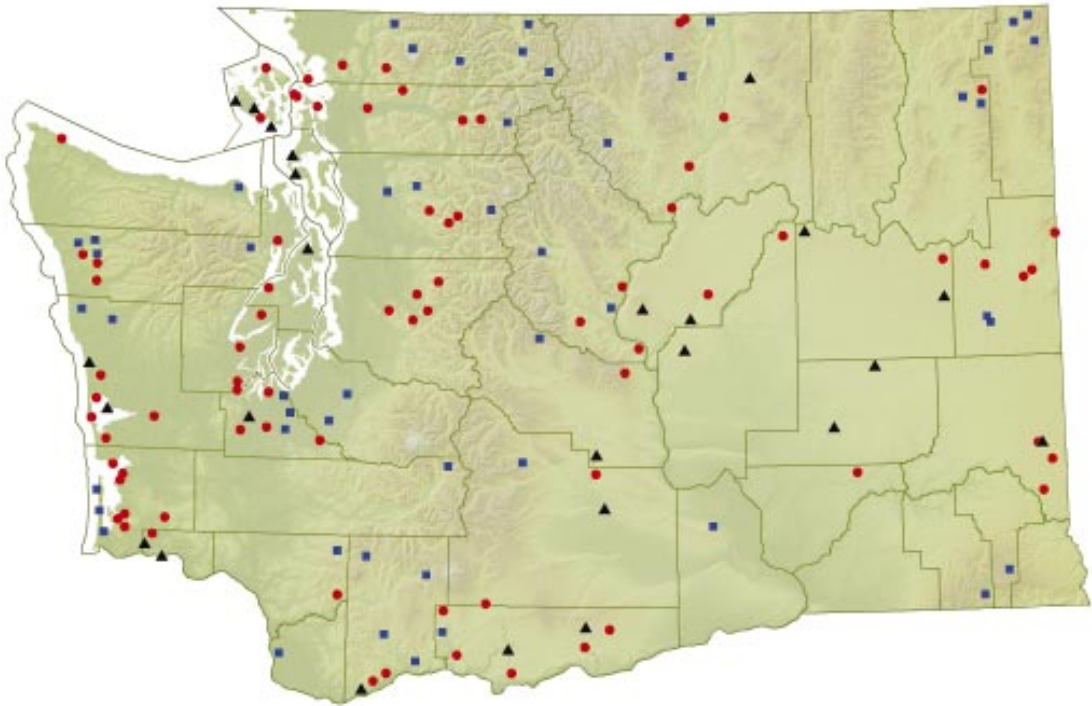
The statewide system of natural areas has grown steadily over the years from the first designation of Sand and Goose Islands as Natural Area Preserves (NAPs) in 1973. Today, DNR alone manages 47 NAPs and 27 Natural Resources Conservation Areas (NRCAs). State Parks and WDFW manage an additional nine (9) natural areas, and federal agencies manage more than 50 Research Natural Areas (RNAs). Private conservation organizations (primarily The Nature Conservancy) also manage more than 35 natural areas in Washington.

In the last two years (since the April, 2001 edition of the *State of Washington Natural Heritage Plan*), DNR has acquired a total of 1,079 acres at 11 different natural areas. In addition, the U.S. Forest Service has established two new RNAs totaling 3,445 acres.

The natural areas recognized in this plan are shown in Figure 5. They are generally in good ecological condition. However, they are not always pristine; in many cases totally undisturbed examples of ecosystems no longer exist or are not available for formal protection. Ideally, natural areas are large enough to protect the priority species and ecosystems present, and to allow the operation of the ecological processes required for their survival.

Figure 5. Statewide Distribution of Natural Areas.

- Federal
- Private
- State



WASHINGTON’S NATURAL AREAS SYSTEM

| Natural Area Type                    | Sites | Acres    |
|--------------------------------------|-------|----------|
| Natural Area Preserves               |       |          |
| DNR                                  | 47    | 28,478   |
| State Parks                          | 5     | 2,084    |
| WDFW                                 | 6     | 1,900    |
| Natural Resources Conservation Areas |       |          |
| DNR                                  | 27    | 85,409   |
| Research Natural Areas               |       |          |
| USFS                                 | 27    | 30,726   |
| National Park Service                | 10    | 20,355   |
| USFWS                                | 11    | 77,925   |
| US Army                              | 5     | 12,745   |
| BLM                                  | 1     | 20       |
| Biological Study Areas               |       |          |
| WSU                                  | 3     | 822      |
| Private Preserves                    |       |          |
| TNC                                  | 35    | 36,586   |
| WA Register of NA's                  | 66    | 6,900    |
| Total                                |       | 303,950* |

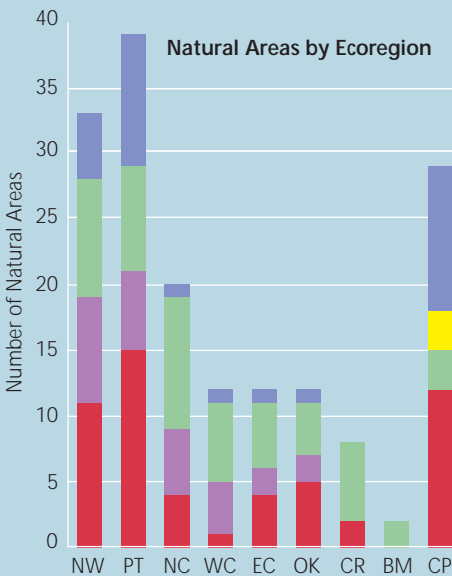
\* This represents approximately 0.7% of the total area of the state.



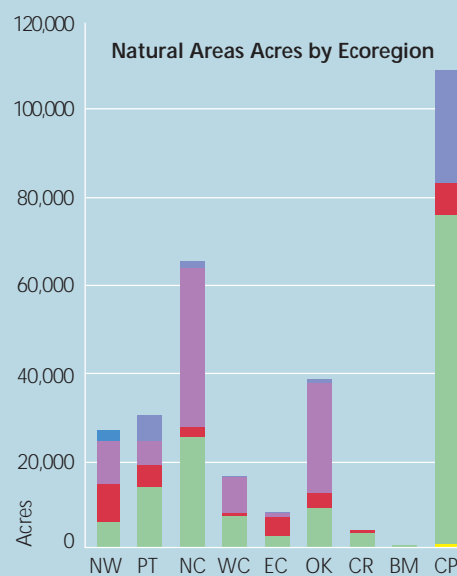
## Geographic Distribution of Natural Areas

The agencies and organizations participating in the statewide system of natural areas have been active in all geographic regions of the state (see map, Figure 5).

Several factors have influenced the number of natural areas in an ecoregion, including the size of the ecoregion and how much of it occurs within Washington, the pattern of land ownership (public vs. private), the degree to which lands within each ecoregion have been converted or degraded, the biotic richness of the ecoregion, and how well the ecoregion has been inventoried. Figure 6 shows the number of natural areas by ecoregion, while Figure 7 shows the number of acres of natural areas by ecoregion.



**Figure 6.** Distribution of natural areas, excluding Washington Register of Natural Areas sites, by ecoregion.



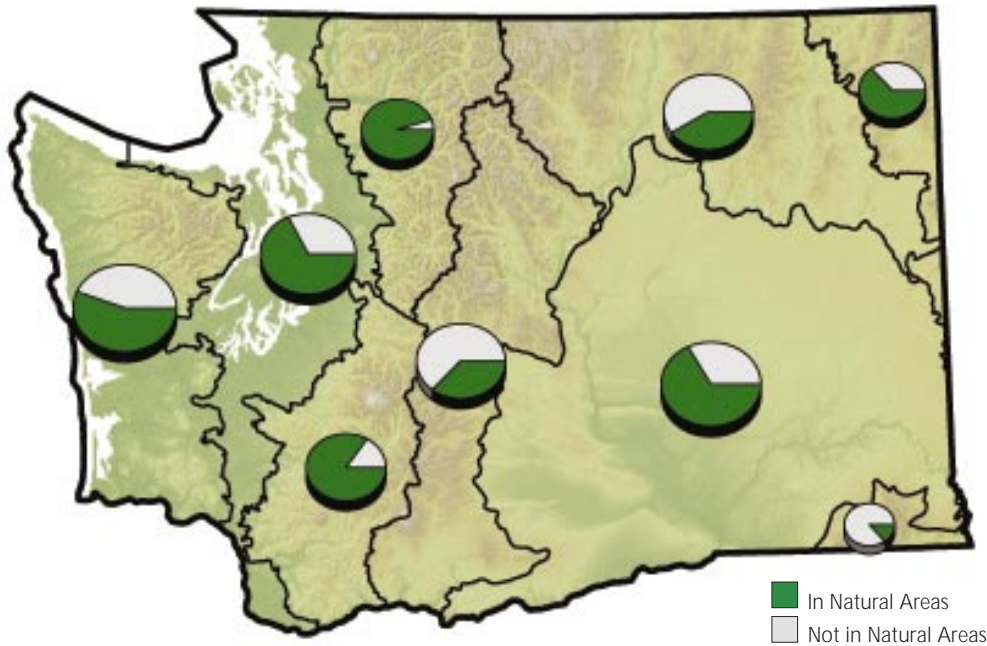
**Figure 7.** Acres of natural areas within each ecoregion, excluding Washington Register of Natural Areas sites.

### ECOREGION ABBREVIATIONS

|    |                                   |
|----|-----------------------------------|
| NW | Pacific Northwest Coast Ecoregion |
| PT | Puget Trough Ecoregion            |
| NC | North Cascades Ecoregion          |
| WC | West Cascades Ecoregion           |
| EC | East Cascades Ecoregion           |
| OK | Okanogan Ecoregion                |
| CR | Canadian Rockies Ecoregion        |
| BM | Blue Mountains Ecoregion          |
| CP | Columbia Plateau Ecoregion        |

See Figure 1 for map depicting Washington's ecoregions.

**Figure 8.** Proportion of priority species and ecosystems present within one or more natural areas within each ecoregion.

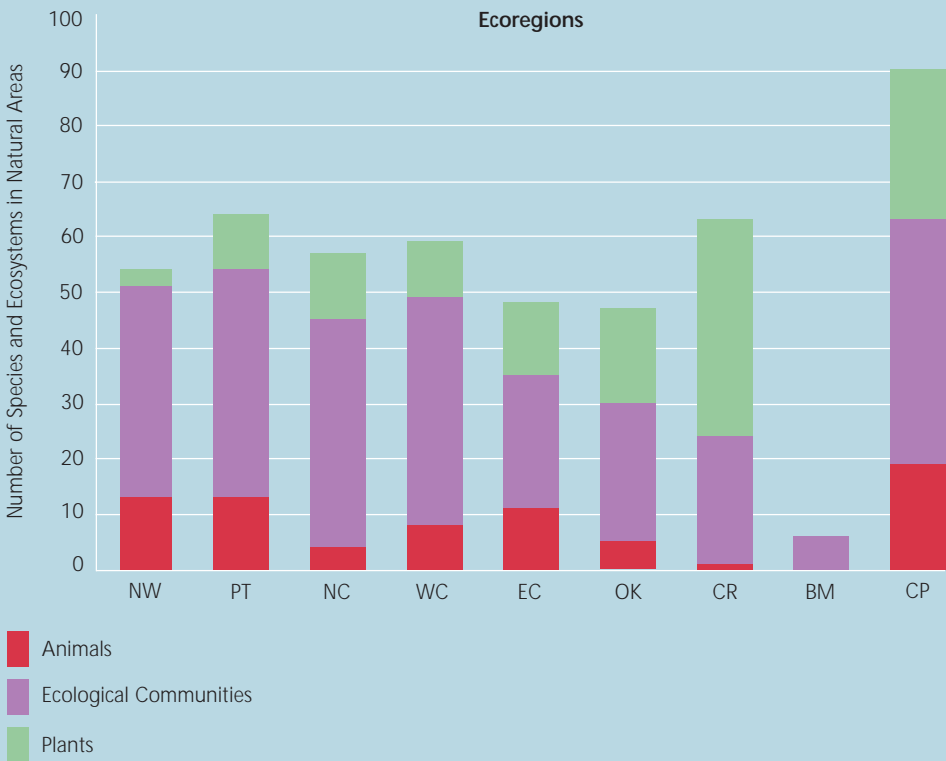


**Figure 9.** Presence of priority species and ecosystems in natural areas by ecoregion.

**ECOREGION ABBREVIATIONS**

- NW Pacific Northwest Coast Ecoregion
- PT Puget Trough Ecoregion
- NC North Cascades Ecoregion
- WC West Cascades Ecoregion
- EC East Cascades Ecoregion
- OK Okanogan Ecoregion
- CR Canadian Rockies Ecoregion
- BM Blue Mountains Ecoregion
- CP Columbia Plateau Ecoregion

See Figure 1 for map depicting Washington's ecoregions.



## Species and Ecosystems Protection within Natural Areas

Most of the natural areas in Washington have more than one priority species or ecosystem present within them. Collectively, 57 percent of the priority species and ecosystems occur within one or more of the natural areas (see Figure 8 for percentages by ecoregion). This represents a certain measure of success, although the mere presence of a priority species or ecosystem within a natural area does not mean that that species or ecosystem is adequately protected.

Designation of NAPs and RNAs has focused more on priority ecosystems than on priority species (see Figure 9). That is, most of the natural areas in the system were identified based primarily on the ecological condition and priority of the ecosystems present. Identifying representative ecosystems for their value as baseline reference sites has been emphasized. A few natural areas, however, such as Selah Cliffs NAP and Thompson Clover RNA, have been identified specifically for rare plant species protection.



◀ Basalt daisy, Selah Cliffs NAP in Yakima County.



► **Fire Suppression:** Prescribed fire can be used as a tool to maintain and/or restore natural areas after decades of fire suppression. At Mima Mounds NAP, fire is used to help maintain the open, grassland habitat for which the preserve was established.



► **Non-native Species:** Purple loosestrife is an aggressive, non-native species that invades wetlands and displaces native species. It is present within one of the states's natural areas and requires coordinated control efforts with state and local agencies.



► **Inappropriate Public Use of a Natural Area:** Unauthorized ORV use can cause significant damage to the species and ecosystems within natural areas. At Bald Hill NAP, ORV use has compacted soils, caused increased erosion, and resulted in an increase in weedy species.



## Management of Natural Areas

Active management is required in many natural areas to ensure the long-term viability of the priority species and ecosystems found within them. The management issues are similar regardless of ownership. Major issues include restoring or mimicking natural ecological processes (e.g., fire), control of non-native species, and addressing public access. Each agency participating in the statewide system of natural areas has management responsibility for its individual areas. Management decisions are governed by agency policies, guidelines and regulations.

## DNR's Natural Areas Program

Management plans provide the direction for activities occurring on natural areas managed by DNR. The management plans are written following a comprehensive public process with input from stakeholders, including scientists, planners and land managers. These plans are available to the public and outline the important natural history and natural features on each preserve, as well as outlining the management, monitoring, and research objectives planned for the site.

Developing and implementing the natural areas plans has been a team effort. DNR has a Natural Areas Manager in each of the seven DNR regions. The managers work with other regional staff, as well as with Natural Areas and Natural Heritage Program staff from Olympia.

### DNR NATURAL AREAS MANAGEMENT PLANS

|                     | NAPs | NRCAs |
|---------------------|------|-------|
| Completed plans     | 6    | 5     |
| Plans in Progress   | 5    | 5     |
| Interim plans       | 27   |       |
| Sites without plans | 11   | 16*   |

\* All NRCAs are covered by the 1992 Statewide Management Plan

### MANAGEMENT ISSUES

#### Fire Suppression

Fire suppression over the years has resulted in:

- changes in species composition.
- changes in ecological processes.
- decreased viability of some priority species and ecosystems.
- increased likelihood of catastrophic fire.

#### Non-native Species

Non-native species encroaching upon natural areas results in:

- direct competition with the native plant and animal species.
- changes in natural ecosystem processes and interactions, such as
  - fire frequency and severity.
  - pollinator activity.

#### Public Access

Inappropriate public use (both foot and ORV traffic) has the potential to:

- spread non-native and invasive weeds.
- impact native species and ecosystems through trampling.
- disrupt animals' behavior patterns.
- compromise the value of natural areas for conducting important baseline research.



## Habitat Management / Restoration Activities

Although most of the sites designated as Natural Area Preserves and Natural Resources Conservation Areas are in good ecological condition, active management is needed at some sites to either maintain or restore ecological condition and function. A number of such projects have been undertaken. Two examples are briefly described below.

Rocky Prairie NAP was established primarily for the protection of the federally threatened golden paintbrush, a plant species limited to grassland habitats. Douglas-fir trees have been encroaching on the grassland habitat for many years, resulting in a decrease in suitable habitat for the golden paintbrush. A restoration plan was developed involving the removal of the encroaching trees. More than 100 trees have now been removed from the NAP to create more open grassland habitat. Since the trees that were removed were mostly mature individuals, their removal resulted in patches of bare ground being exposed. In an attempt to prevent the invasion of weedy species, the bare ground has been re-vegetated with native plants grown from seeds collected from the site.

At Chehalis River Surge Plain, a restoration project is underway to restore a disturbed portion of the natural area that is dominated by invasive species. The project involves the removal of blackberries and Japanese knotweed from several acres, and then planting the site with native alder, spruce, cedar, rose, and salmonberry.

► *Left:* Volunteers help prepare for tree planting in a restoration effort at Chehalis River Surge Plain NAP.

*Right:* Douglas-fir removal from Rocky Prairie NAP has resulted in an increase in suitable habitat for a federally threatened plant species dependent on open, grassland habitat.



## Volunteer Contributions / Opportunities

The DNR Natural Areas Program, in partnership with The Nature Conservancy, has developed a volunteer stewardship system. To date, 80 volunteers have been trained to provide management assistance on 44 NAPs. Since 2000, volunteers have contributed more than 14,000 hours of time and labor. Volunteer site stewards have helped DNR monitor specific sites and perform research in various natural areas. The monitoring by site stewards has helped eradicate weeds and restore areas to a condition more closely resembling their natural state. Volunteers provide various backgrounds and expertise that help DNR manage natural areas.

// Since 2000,  
volunteers have contributed  
more than 14,000 hours of  
time and labor. //

## Monitoring and Research on NAPs

Research and monitoring are tools used to evaluate the effectiveness of management activities and to track significant changes in ecological features over time. Here are a few examples of the important research and monitoring activities occurring on DNR natural areas.

- Natural Areas Program ecologists are monitoring rare plant populations at a number of sites, including Columbia Hills, Camas Meadows, Rocky Prairie and Selah Cliffs NAPs.
- Students from The Evergreen State College are monitoring water quality at Kings Lake Bog NAP to establish monitoring protocols and baseline information on bogs. This project also provides training in the application of scientific techniques for students.
- A prescribed, experimental fire was used at Camas Meadows NAP to test the effects of fire on a federally threatened plant species, the Wenatchee Mountains Checker-mallow. The effectiveness of fire as a potential management tool is being investigated.
- Scientists continue to monitor the effects of a 1998 wildfire at Cleveland Shrub-Steppe NAP. To date there has been little or no increase in non-native, weedy species, while there has been a dramatic increase in native forbs.

## Educational Opportunities on NAPs

With their unique features, natural areas offer outstanding opportunities for environmental education. A volunteer water quality monitoring program has been initiated with local schools for the Trout Lake NAP in Klickitat County. The half-mile paved interpretive trail and shelter at Mima Mounds NAP educates hundreds of visitors annually about the rare and mysterious mounded prairie landscape. Natural areas staff also lead numerous field trips for undergraduate science classes.

## State Parks and Recreation Commission Natural Area Preserves

Potential natural areas and site-specific management issues are identified during the course of management planning for individual state parks. The Classification and Management Planning (CAMP) process has occurred for Mount Moran and Mount Spokane State Parks. Management plans have been completed for Ragged Ridge and Castle Rock NAPs.

## Washington Department of Fish and Wildlife Natural Area Preserves

In the 1990s, the Washington State Department of Fish and Wildlife began using a public process to develop management plans for all WDFW Wildlife Areas. Through this process, potential natural areas are identified. Site-specific management plans are developed once an NAP is designated on WDFW lands. NAP management plans were developed for five WDFW NAPs that were designated in the late 1980s. Most of these sites require little hands-on management. District biologists attempt to visit the sites on a biennial basis to determine whether the species and ecosystems are still intact and to identify threats and management needs.

## Challenges and Opportunities

DNR and its partner agencies and organizations have achieved a number of successes in implementing the Natural Area Preserves Act. More than 350 priority species and ecosystems are protected, or at least well represented, within the statewide system of natural areas. And although the distribution of natural areas is uneven, there are natural areas in all nine of Washington's ecoregions.

But a number of challenges remain. There are still several hundred priority species and ecosystems that are not adequately protected or represented within the natural areas system. The need appears to be the greatest in the Columbia Plateau and Puget Trough ecoregions, where there is a combination of a high number of priority species and ecosystems and a high rate of habitat loss. However, protection needs have been identified in all ecoregions.

The Natural Heritage Program will continue to identify those protection needs. Program scientists will conduct inventories and gather information on the priority species and ecosystems of the state. Using that information, potential sites for addition to the statewide system of natural areas will be identified.

There is also an opportunity for coordination with DNR's efforts to implement an aquatic reserve program. This program is intended to help ensure protection of aquatic environments. Such a program could complement the objectives of the Natural Heritage and Natural Areas programs, particularly at natural areas sites that are adjacent to marine and freshwater environments.



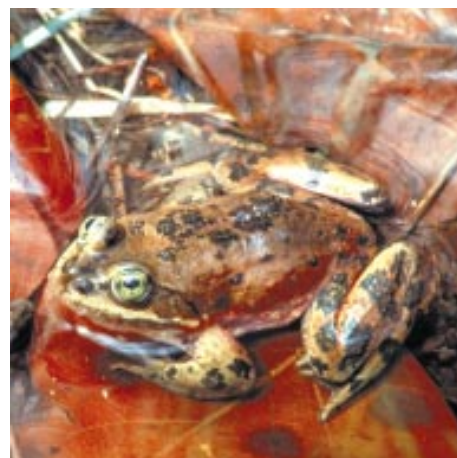
But given the magnitude of the protection needs that still exist, and the rate at which the overall landscape of the state is changing, it is evident that greater cooperation with partners is essential. The ecoregional conservation planning effort being led by The Nature Conservancy provides one avenue for increased cooperation and coordination among state and federal agencies and private conservation organizations. The process is collaborative and designed to result in a shared set of conservation priorities for each ecoregion, and ultimately in the identification of a set of priority sites for conservation action. Some of the priority sites would be candidates for addition to the statewide system of natural areas. Other sites might be better suited to other conservation measures.

One tool that should be evaluated carefully is the Washington Register of Natural Areas. This program has not been emphasized in recent years, due in large part to its lack of providing long-term certainty of protection. Because participation in the program is voluntary, protection is not permanent. However, the fact that the program is voluntary, and not regulatory, has great appeal for many people. This tool should be evaluated for its effectiveness in achieving conservation and for its potential to attract additional landowners to participate in the conservation of our natural heritage.

Another avenue of increasing the conservation of Washington's biological diversity is to involve the many land trusts in the state. A few of these trusts are already involved in conservation planning efforts. But through outreach and the development of partnerships, there is potential for a much greater level of land trust participation.

Another challenge that lies ahead is the task of managing all of the natural areas for the species and ecosystems that they are meant to protect. As mentioned above, many of the natural areas require active management. The challenge is much more than just a workload issue. It is also a knowledge issue. A better understanding is needed regarding how the ecosystems within natural areas function. In many cases critical ecological processes, such as fire, have been interrupted. Successful management will require that those processes be restored, either to function on their own or as prescribed management actions. Ecosystem and species-specific research would provide the knowledge base to guide such efforts. Outreach to the scientific research community should identify both the needs of, and the opportunities present on, the natural areas within the statewide system.

BILL LEONARD



▲ Only three populations of the Oregon spotted frog are known to exist in Washington. The frog is thought to have declined because of loss of habitat, the introduction of non-native predators, and a high vulnerability to nitrates and nitrites, such as those found in fertilizer.